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EXAMINER
DAGER, JONATHAN M

ART UNIT	PAPER NUMBER
3663	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,608	FIELDER, NICHOLAS ALBERT WILLIAM	
	Examiner	Art Unit	
	JONATHAN M. DAGER	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *2,3,9,10,21-25 and 27-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-8,11-20 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *13 April 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of invention I, species "A" (claims 1, 4-8, 11-20, and 26) in the reply filed on 02 April 2009 is acknowledged.

2. Claims 2, 3, 9, 10, 21-25, and 27-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to the nonelected invention(s), there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 25 April 2008.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 4-8, 11-19, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mine (US 5,515,274), and further in view of Shank (US 2002/0035423)

Regarding claims 1, 4, and 26, Mine discloses an active suspension system of a vehicle has a feed back control system for controlling four suspensions for the four wheels to maintain a reference vehicle height responsive to detected vertical relative displacements between the wheels and the vehicle body at said suspensions, and a feed forward control system for controlling the suspension to reduce pitching of the vehicle responsive to detected longitudinal acceleration. There is further provided a circuit for changing the reference vehicle height which

is responsive to the absolute value of the detected longitudinal acceleration or deceleration for reducing the reference vehicle height with increase of the absolute value so that the vehicle body is lowered while the pitching is maintained at a predetermined value so as to obtain better driver's sensation during vehicle acceleration and deceleration and to improve the performance of acceleration and deceleration (abstract).

Mine discloses in FIG. 2 that reference characters 1a and 1b indicate suspensions of left and right front wheels of a motor vehicle, and 1c and 1d indicate suspensions of left and right rear wheels. Each of the suspensions 1a, 1b, 1c and 1d is provided with a pneumatic chamber D and a hydraulic cylinder E. The chamber D has an oil chamber A and an air chamber B which are divided by a diaphragm C. The oil chamber A of the chamber D and an oil chamber F of the hydraulic cylinder E are communicated through an orifice G. As shown in FIG. 1, one end of the hydraulic cylinder E (i.e., a bottom portion of the cylinder) is connected to a suspension arm member 30 on the vehicle wheel W, and the other end (a piston rod) of the hydraulic cylinder E is connected to a member 31 of a vehicle chassis. In accordance with the load on the cylinder E, hydraulic oil in the oil chamber F flows into and out of the oil chamber A through the orifice G so as to generate an appropriate damping force and at the same time to produce a spring action by the volumetric elasticity of the air sealed in the air chamber B. The system described above is a known hydro-pneumatic suspension system (column 3 lines 11-32).

Thus, Mine discloses a vehicle suspension control system for a vehicle in which each wheel is supported from the chassis of the vehicle through a pneumatically operated extension element which can control the degree of relative displacement between the wheel and the chassis, the extension element providing resilient support for the chassis from the respective

wheel, the extension element further enabling the resilient relative movement between the wheel and the chassis.

The above also provides for a source of pressurized fluid, the source connected to each element through a first control valve, and the exhaust connected to each extension element through a second control valve.

Mine discloses that there are provided control valves 2a, 2b, 2c and 2d that supply and discharge oil to and from the oil chamber F of the hydraulic cylinders E. The control valves 2a, 2b, 2c and 2d are operated independently by a valve drive signal from a controller 3. In FIG. 1, the control valves 2a, 2b, 2c and 2d are installed separately in two groups for the front and rear suspensions (column 3 lines 33-39).

Thus, Mine discloses a controller controlling the opening and closing of the valves to control the pressure within the extension element.

Mine discloses that the suspensions 1a, 1b, 1c and 1d are provided with suspension stroke sensors 13 as shown in FIGS. 1 and 2. The sensor 13 detects vertical relative displacement for each suspension between the wheel and the vehicle body and input the information of the relative displacement for each of the suspensions 1a, 1b, 1c and 1d to the controller 3 (column 3 lines 64-67, column 4 lines 1-2).

Thus, it is disclosed a first sensor associated with each wheel, adapted to sense the relative position between the wheel and the chassis and provide a first output to the controller.

Mine discloses that in order to detect behaviors of the vehicle, there are provided a vertical G-sensor 12 to detect vehicle vertical acceleration (vertical G), a lateral G-sensor 15 to detect vehicle lateral acceleration (lateral G) and a longitudinal G-sensor 14 to detect vehicle

longitudinal acceleration (longitudinal G). For example, the lateral G-sensor 15 derives lateral acceleration based upon signals from a vehicle speed sensor and a steering angle sensor. Or the lateral acceleration is computed from detected steering torque and steering assisting force etc. FIG. 1 shows the positions where the G-sensors 12, 14 and 15 are installed. Signals of the sensors 12, 13, 14 and 15 are inputted to the controller 3. Responsive to the signals, the controller 3 determines control quantity of charge and discharge of oil for each suspension to send valve driving signals to the respective control valves 2a, 2b, 2c and 2d, as will be described below with reference to FIG. 3.

Thus, in response to the sensed parameters of the adjacent wheels, the controller adjusts the flow/exhaustion of fluid in each extension element, thus affecting the fluid pressure within the individual elements.

Mine discloses that by setting a vehicle height adjusting switch 16, a reference vehicle height signal is generated from a reference vehicle height generating circuit H. The reference vehicle height signal is subtracted from the vertical relative displacement signal to be inputted to the dead-zone circuit I.sub.3, and an actual relative displacement signal is obtained. The actual relative displacement signal is passed through the dead-zone circuit I.sub.3, where a signal fraction within a set zone in the vicinity of zero is removed therefrom. The resulting signal is passed through a gain circuit G.sub.3 to become a control command quantity Q.sub.3 matched to the corresponding control valve characteristic (column 4 lines 37-46).

Mine discloses that it is known that active suspension systems have a feed back control system for controlling the suspensions so as to maintain a reference vehicle height responsive to relative vertical displacements between the respective wheels and the vehicle body. The active

suspension system has, in addition to the feed back control system, a feed forward control system for maintaining preestimated vehicle rolling and pitching responsive to longitudinal and lateral accelerations detected during vehicle acceleration, deceleration and turning. By combining the feed forward control system with the feed back control system, the attitude of the vehicle is maintained at a desired attitude without delay (column 1 lines 34-45).

Thus, all sensory inputs are used to substantially maintain the level of the vehicle relative to the ground being traversed.

Mine discloses that signals generated from the controller 3 responsive to signals from a pressure sensor 81 indicate that the high-pressure accumulator 8 has attained a predetermined pressure (column 3 lines 60-65). However, Mine does not explicitly disclose the second sensor is adapted to sense the pressure of the fluid in each extension element.

Shank, in an invention similar to Mine, teaches an electronic input and/or output circuitry to interface with at least one fluid pressure sensor which provides output signals related to a fluid pressurized height-adjusting member (para 0018).

Mine has disclosed a base invention which is capable of all functions of the claimed embodiments, including an active suspension system in which the controller is configured to receive multiple inputs for adjusting the height of the extension members to keep the vehicle body at a substantially level attitude. Where Mine is deficient, with respect to claim 1 is that Mine does not explicitly disclose the second sensory element adapted to sense pressure in each element. Shank cures the deficiency in an invention similar to that of Mine.

Thus, since both inventions both disclose/teach similar elements and usage, it would have been obvious to one of ordinary skill in the art at the time of the invention to simply substitute

one apparatus into the other, or at least combine their respective elements, to achieve no more than the predictable result of implementing a separate sensor in each extension member to determine fluid pressure within the member.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(A).

Simple substitution of one known element for another to obtain predictable results will support a conclusion of obviousness. See MPEP 2143 (B).

Regarding claim 5, Mine discloses that the suspensions 1a, 1b, 1c and 1d are provided with suspension stroke sensors 13 as shown in FIGS. 1 and 2. The sensor 13 detects vertical relative displacement for each suspension between the wheel and the vehicle body and input the information of the relative displacement for each of the suspensions 1a, 1b, 1c and 1d to the controller 3 (column 3 lines 64-67, column 4 lines 1-2).

Mine discloses that the active suspension system of a vehicle has a feed back control system for controlling four suspensions for the four wheels to maintain a reference vehicle height responsive to detected vertical relative displacements between the wheels and the vehicle body at said suspensions (abstract).

Regarding claims 6-8, Mine discloses that in order to detect behaviors of the vehicle, there are provided a vertical G-sensor 12 to detect vehicle vertical acceleration (vertical G), a lateral G-sensor 15 to detect vehicle lateral acceleration (lateral G) and a longitudinal G sensor

14 to detect vehicle longitudinal acceleration (longitudinal G). The lateral G-sensor 15 derives lateral acceleration based upon signals from a vehicle speed sensor and a steering angle sensor. Or the lateral acceleration is computed from detected steering torque and steering assisting force. The positions where the G-sensors 12, 14 and 15 are installed are as indicated in FIG. 1. Signals of the sensors 12, 13, 14 and 15 are inputted to the controller 3. Responsive to the signals, the controller 3 determines control quantity of charge and discharge of oil for each suspension to send valve driving signals to the respective control valves 2a, 2b, 2c and 2d, as will be described below with reference to FIG. 3 (column 3 lines 66-67, column 4 lines 1-14).

Regarding claims 11-15, 18, and 20, Mine discloses that In each suspension unit, the vertical acceleration and the vertical relative displacement (stroke) are respectively detected by the sensors 12 and 13. The vertical acceleration signal from the vertical G-sensor 12 is passed through a low-pass filter LPF to reduce its high-frequency component. The signal is then passed through a dead-zone circuit I.sub.1 to remove a signal of a set range in the neighborhood of zero. The resulting signal is subjected to multiplication by a gain circuit G.sub.1. Thus a control command quantity Q.sub.1 matched to the characteristics of the corresponding control valve 2a, 2b, 2c or 2d is obtained (column 4 lines 21-31).

By setting a vehicle height adjusting switch 16, a reference vehicle height signal is generated from a reference vehicle height generating circuit H. The reference vehicle height signal is subtracted from the vertical relative displacement signal to be inputted to the dead-zone circuit I.sub.3, and an actual relative displacement signal is obtained. The actual relative displacement signal is passed through the dead-zone circuit I.sub.3, where a signal fraction

within a set zone in the vicinity of zero is removed therefrom. The resulting signal is passed through a gain circuit G.sub.3 to become a control command quantity Q.sub.3 matched to the corresponding control valve characteristic (column 4 lines 43-54).

Mine discloses a feed forward control system for controlling the suspension to maintain an intended rolling of the vehicle responsive to detected lateral acceleration (abstract), and in addition to the feed back control system, a feed forward control system for maintaining preestimated vehicle rolling and pitching responsive to longitudinal and lateral accelerations detected during vehicle acceleration, deceleration and turning. By combining the feed forward control system with the feed back control system, the attitude of the vehicle is maintained at a desired attitude without delay (column 1 lines 38-45).

Regarding claim 16, Mine discloses that by setting a vehicle height adjusting switch 16, a reference vehicle height signal is generated from a reference vehicle height generating circuit H. The reference vehicle height signal is subtracted from the vertical relative displacement signal to be inputted to the dead-zone circuit I.sub.3, and an actual relative displacement signal is obtained. The actual relative displacement signal is passed through the dead-zone circuit I.sub.3, where a signal fraction within a set zone in the vicinity of zero is removed therefrom. The resulting signal is passed through a gain circuit G.sub.3 to become a control command quantity Q.sub.3 matched to the corresponding control valve characteristic (column 4 lines 43-54).

Regarding claim 17, Mine discloses a feed forward control system for controlling the suspension to maintain an intended rolling of the vehicle responsive to detected lateral

acceleration. There is further provided a circuit for changing the reference vehicle height which is responsive to the absolute value of the detected lateral acceleration, and operates to reduce the reference vehicle height with increase of the absolute value so that the vehicle body is lowered while the rolling is maintained whereby a better driver's sensation during a vehicle turn is obtained and the capability of turning of the vehicle is improved (abstract).

5. Claims 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Mine and Shank, as applied to claim 1 above, and further in view of Schubert (2001/0044685).

Regarding claim 19, Mine, as combined above with Oakley does not explicitly teach that a gyro is used as the sensing means for determining the level of the datum plane.

Schubert, however, teaches a leveling sensor 36 mounted to cab 6 to generate signals indicative of the degree to which the attitude of cab 6 is level relative to horizontal. Leveling sensor 36 may include a gyroscope or electronic level signal generator, and sensor 36 may be mounted at the center of gravity of cab 6. The signal from sensor 36 can be used to control the attitude of cab 6 and to maintain a level attitude (para 0036).

Thus, Schubert teaches the known embodiment wherein a gyroscope is utilized as an input to an active suspension system utilized to keep a reference level .

All of the components and methods are known in the above prior art. The only difference is a combination of these elements into a single device.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the gyroscope of Schubert onto the combination of Mine and Shank,

since all systems could be used in combination to produce the predictable result of utilizing an alternate sensor adapted to provide a signal indicative of a datum plane.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(A).

6. It is noted that the claims contain multiple statements of intended use or field of use (e.g. "for providing", "is capable of", "can be", "wherein…applied", "adapted to", etc.). These statements of intended use, "adapted to/for" clauses, "wherein" clauses, or "whereby" clauses are essentially method limitations. Thus, these claims, as well as other statements of intended use, do not serve to patentably distinguish the claimed structure over that of the reference.

See MPEP § 2114 which states:

> A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim.
>
> Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions.
>
> Apparatus claims cover what a device is not what a device does.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

Additionally, the terms "configured to" or "arranged to" are considered to be structurally modified statements and are not intended use. Claims amended to include the above listed language may patentably distinguish themselves structurally.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN M. DAGER whose telephone number is (571)270-1332. The examiner can normally be reached on 0830-1800 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD
21 May 2009

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663